HEALTH RESEARCH AND POLICY

Emeriti: (Professors) Byron Wm. Brown, Jr., Alain Enthoven, Victor R. Fuchs, Lincoln E. Moses, Ralph S. Paffenbarger, Jr.
Chair: Mark Hlatky
Professors: Bradley Efron, Trevor Hastie, Mark Hlatky, Iain M. Johnstone, Jennifer L. Kelsey, Richard A. Olshen, Robert Tibshirani, Alice S. Whittemore
Associate Professors: Laurence Baker, Abby King, Lorene M. Nelson, Douglas Owens, Julie Parsonnet
Assistant Professors: M. Kate Bundorf, Atsuko Shibata
Professor (Research): Philip W. Lavori
Associate Professor (Research): Dan Bloch
Assistant Professor (Research): Laura Lazzeroni
Courtesy Professors: Alan M. Garber, Stephen P. Fortmann, Neil Risch
Courtesy Associate Professors: Mary Goldstein, Alex Macario, Mark McClellan, Douglas Owens, David R. Rogosa
Courtesy Assistant Professor: Michael K. Gould
Courtesy Assistant Professor (Research): Gillian Sanders
Senior Lecturer: Irene Corso
Lecturers: Raymond Balise, Timothy K. Stanton
Consulting Professors: Gary Friedman, Jack S. Mandel, Joseph Selby
Consulting Associate Professor: Mary Louise Skovron
Consulting Assistant Professors: Paul Barnett, Ciaran Phibbs, John Piette
Visiting Professor: Elizabeth Holly
Visiting Associate Professor: Marion Lee

The Department of Health Research and Policy has three divisions:

1. Biostatistics deals with scientific methodology in the medical sciences, emphasizing the use of statistical techniques.
2. Epidemiology provides training and experience in the application of epidemiologic methods to the study of disease etiology and control. It is also concerned with problems of health and disease in human populations in all parts of the world and with efforts toward improving levels of health.
3. Health Services Research is concerned with many aspects of health policy analysis in the public and private sectors.

The department, and each division, offers courses in its areas of specialization. These are described fully in the Stanford University *School of Medicine Catalog.*

GRADUATE PROGRAMS

The Program in Epidemiology and the Program in Health Services Research are housed in the Department of Health Research and Policy. These programs are described separately within the School of Medicine listings of this bulletin. Students with an interest in pursuing advanced degrees with an emphasis on biostatistics can do so through programs offered by the Department of Statistics. Division of Biostatistics faculty participate in these programs.

COURSES

Course and lab instruction in the Department of Health Research and Policy conforms to the "Policy on the Use of Vertebrate Animals in Teaching Activities," the text of which is available at http://www.stanford.edu/dept/DoR/rph/8-2.html.

85Q. Stanford Introductory Seminar: Current Issues in Women's Health—Preference to sophomores. Current issues in women's health from an epidemiologic perspective. Possible topics (as they pertain to women): coronary heart disease, breast cancer (or other cancers), osteoporosis, HIV infection, eating disorders, depression, domestic abuse, benefits and risks of oral contraceptives, benefits and risks of hormone replacement therapy, new replacement therapies (e.g., SEMs), current prevention trials in women (e.g., the Women's Health Initiative), menopause, menstruation, health issues for athletes, health issues in developing countries, adverse pregnancy outcomes, obesity, cigarette smoking. Prerequisite: knowledge of human biology.
3 units (Kelsey) not given 2001-02

89Q. Stanford Introductory Seminar: Cross-Cultural Issues in Medicine—Preference to sophomores. Cross-cultural issues that impact health care delivery, e.g., ethnicity, immigration, language barriers, and service expectations. Fosters an understanding of culturally unique and non-English speaking populations, developing interpersonal and communication skills with diverse ethnic groups.
3 units, Win (Corso)

202. Introduction to Clinical Research—Required for medical students. Introduces epidemiological concepts, techniques, and studies: statistical reasoning and the application of common statistical procedures used in lab and clinical investigations. Student-designed research project.
4 units, Win (Lavori, Parsonnet)

205. The U.S. Health Care System and Health Policy—Introduces issues in health care systems, organization, and financing including health insurance, managed care, health care costs, the uninsured, and health reform, focusing on the U.S. health care system.
2 units, Win (Baker)

206. Statistical Methods for Meta-Analysis—(Same as Education 493B, Statistics 211.) Meta-analysis is a quantitative method for combining results of independent studies, and enables researchers to synthesize the results of related studies so that the combined weight of evidence can be considered and applied. Examples from the medical, behavioral, and social sciences. Topics: literature search, publication and selection bias, statistical methods (contingency tables, cumulative methods, sensitivity analyses, non-parametric methods). Project. Prerequisites: basic sequence in statistics.
3 units, Win (Olkin)

209. Medicine and the Law—Areas of the law that pertain to the practice of medicine. Topics: medical malpractice, patient consent and confidentiality rights, human subject research, withdrawing life support and physician-assisted suicide, futile medical care, legal requirements in psychiatry, physician discipline, and medical staff law.
3 units, Win (Eaton)

210. Health Law and Policy—(Same as Law 313.) Open to all law or medical students and to qualified undergraduates by consent of instructor. Introduction to the American health care system and its legal and policy problems. Topics: the special characteristics of medical care compared to other goods and services, the difficulties of assuring quality care, the complex patchwork of the financing system, and the ethical problems the system raises.
3 term units, Aut semester (Greely)

211. Advanced Issues in Health Law and Policy: Genetics and Law—(Same as Law 649.) Open to 20 students from any Stanford graduate or professional program. Writing seminar on the ethical, legal, and social issues raised by the revolution in human genetics. Topics: DNA fingerprinting, genetic privacy, property rights in genes, genetic testing, genetic discrimination, transgenics, and eugenics.
3 units Spr (Greely)

212. Cross-Cultural Medicine—Provides the interviewing and behavioral skills needed to facilitate culturally relevant health care across all population groups. The explicit and implicit cultural influences operative in a variety of formal and informal medical contexts.
3 units, Spr (Corso)

222. Data Management—Computerized data management skills for processing biomedical and epidemiological data. Topics include importing and exporting data files, cleaning data, descriptive statistics, and visualizing data.

1 unit, Aut (R. Balise)

223. Applied Epidemiologic Analysis—Computerized analysis of cohort and case-control data. Cleaning raw data sets in preparation for analysis. Database construction maintenance, searches, and visualization. Emphasis is on categorical data analysis techniques: contingency tables, modeling binary outcomes with logistic regression, and survival analysis. Prerequisite: 222 or consent of instructor.

3 units, Spr (Balise)

224. Statistical Issues in Epidemiology—Selected advanced problems in the design and analysis of epidemiological studies, motivated by published investigations. Possible topics: issues in matching controls to cases in case-control studies, methods for analyzing data from cohort studies, and methods for the design and analysis of family and genetic studies. Prerequisites: 203, 225, 226, or equivalents.

3 units (Whittemore) alternate years, given 2002-03

225. Design and Conduct of Epidemiologic Studies—Intermediate-level. Provides students with the knowledge and skills to design, carry out, and interpret epidemiologic studies, particularly of chronic diseases. Topics: epidemiologic concepts, sources of data, cohort studies, case-control studies, cross-sectional studies, sampling, estimating sample size, questionnaire design, and the effects of measurement error. Prerequisite: 202 or equivalent, or consent of instructor.

3-4 units, Aut (Kelsey)

226. Advanced Epidemiologic Methods—The principles of measurement, measures of effect, confounding, effect modification, and strategies for minimizing bias in epidemiologic studies. Prerequisite: 225 or consent of instructor.

3-4 units, Win (Nelson)

227. Epidemiology of Musculoskeletal and Neurologic Disorders—Epidemiologic contributions to understanding the etiology of conditions such as osteoporosis and fractures, congenital and developmental musculoskeletal disorders, arthritic disorders, disability, Alzheimer's disease and dementia, stroke, epilepsy, headache, chronic neurologic diseases, and head and back injuries. Emphasis is on the methodologic issues important to the study of musculoskeletal and neurologic disorders. Prerequisite: 225 or consent of instructors.

3 units (Kelsey, Nelson) alternate years, given 2002-03

228. Molecular Epidemiology—Molecular and biochemical biomarkers for measuring exposure, host susceptibility, and endpoint (disease) as applied to epidemiologic studies of infectious diseases, cancer, and other chronic diseases. Topics: DNA fingerprinting to determine transmission pathways; biochemical markers of environment exposures; study design and methodological consideration; ethical and legal issues. Prerequisite: 202 or 225, or consent of instructor.

3 units, Spr (Shibata) alternate years, not given 2002-03

230. Cancer Epidemiology—Lectures/discussions on key issues in cancer epidemiology. Topics: descriptive epidemiology and sources of incidence/mortality data; the biological basis of carcinogenesis and its implications for epidemiologic research; methodological issues relevant to cancer research; causal inference; major environmental risk factors; genetic susceptibility; cancer control; examples of current research; and critique of the literature. Prerequisite: 202 or 225, or consent of instructor.

3 units (Shibata) alternate years, given 2002-03

231. Epidemiology of Infectious Diseases—The principles of the transmission of the infectious agents (viruses, bacteria, rickettsiae, mycoplasma, fungi, and protozoan and helminth parasites). The role of vectors, reservoirs, and environmental factors. Pathogen and host characteristics that determine the spectrum of infection and disease. Endemicity, outbreaks, and epidemics of selected infectious diseases. Principles of control and surveillance.

3 units (Parsonnet) alternate years, given 2002-03

238. Seminar/Journal Club in Epidemiology—On-going research is presented by faculty, staff, students, and guests, and recent journal articles are discussed.

1 unit, Aut, Win, Spr (Staff)

250C. Statistical Analysis in Educational Research: Multivariate Analysis—(Same as Education 250C) Primarily for doctoral students. Multivariate analysis of variance, discriminant analysis, factor analysis, correlation analysis. Data compression: principle components analysis, clustering, Intensive use of computer packages. Prerequisites: 250B, 257, Statistics 200, or equivalent. (All Areas)

4 units, Aut (Olkin)

251. Design and Conduct of Clinical Trials—The rationale for Phases 1-3 clinical trials, the recruitment of subjects, techniques for randomization, data collection and endpoints, interim monitoring, and reporting of results. Emphasis is on the theoretical underpinnings of clinical research and the practical aspects of conducting clinical trials.

3 units, Win (M. Hlatky)

256. Economics of Health and Medical Care—(Same as Biomedical Informatics 256, Economics 156/256; undergraduates register for Economics 156.) Institutional, theoretical, and empirical analysis of the problems of health and medical care. Topics: institutions in the health sector; measurement and valuation of health; nonmedical determinants of health; medical technology and technology assessment; demand for medical care and medical insurance; physicians, hospitals, and managed care; international comparisons. Prerequisite: Economics 50 and 102A or equivalent statistics, or consent of instructor. Recommended: Economics 51.

5 units, Win (Bundorf)

260A,B,C. Workshop in Biostatistics—(Same as Statistics 260A,B,C.) Applications of statistical techniques to current problems in medical science. Enrollment for more than 2 units of credit involves extra reading or consulting and requires consent of the instructor.

260A. *1-5 units, Aut (Olshen, Bloch, Efron, Hastie, Johnstone, Lazzeroni, Tibshirani)*

260B. *1-5 units, Win (Olshen, Bloch, Efron, Hastie, Johnstone, Lazzeroni, Tibshirani)*

260C. *1-5 units, Spr (Olshen, Bloch, Efron, Hastie, Johnstone, Lazzeroni, Tibshirani)*

261. Intermediate Biostatistics: Analysis of Discrete Data—(Same as Statistics 261.) The 2x2 table. Chi-square test. Fisher's exact test. Odds ratios. Sampling plans; case control and cohort studies. Series of 2x2 tables. Mantel Hantzel. Other tests. *k* x *m* tables. Matched data logistic models. Conditional logistic analysis, application to case-control data. Log-linear models. Generalized estimating equations for longitudinal data. Cell phones and car crashes: the crossover design. Special topics: generalized additive models, classification trees, bootstrap inference.

3 units, Win (Tibshirani)

262. Regression, Prediction, Survival Analysis—(Same as Statistics 262.) Linear and inherently nonlinear models. Prediction vs. testing. Sample reuse methods. Analysis of variance. Components of variance. Introduction to multivariate analysis: the normal distribution. Principle components and *k*-means clustering. Survival analysis: the actuarial and

Kaplan-Meier methods. The log-rank test. Weibull models. The Cox model, including estimation of baseline hazard.

3 units, Spr (Owen)

266. Cardiovascular Disease Epidemiology and Prevention—The epidemiological, biological, and behavioral perspectives of cardiovascular disease, and assessment and modification of the risk factors relating to it. The potential for disease prevention in the context of major prevention trials. Public policy ramifications. Topics: diet, weight control, smoking, Type-A behavior, and exercise. Prerequisites for undergraduates: Human Biology core and consent of instructor.

2-3 units, Aut (King)

280,281,282. Spanish for Medical Students—(Same as Spanish 121M,122M,123M.) Geared to achieve a practical and rapid command of spoken Spanish. Topics: the human body, hospital procedures, diagnostics, food, and essential phrases for on-the-spot reference when dealing with Spanish-speaking patients. Series can be taken independently, depending on the level of prior knowledge.

3 units, Aut, Win, Spr (Corso)

283. Core Seminar—Presentation of research in progress and tutorials in the field of health services research.

1 unit, Aut, Win, Spr, Sum (Baker, Bundorf, Garber, Hlatky, Owens)

290. Advanced Spanish Conversation—Intensive practice of oral language skills covering, e.g., how to conduct a full pediatric, gynecological, and other specialty exams; patient health education and counseling; and diseases like diabetes, asthma, and TB. Prerequisite: Spanish proficient or consent of instructor.

3 units, Aut, Win, Spr (Corso)

291. Intensive Spanish for Medical Students—Covers over two quarters the regular Spanish 280-282 three-quarter sequence.

6 units, Sum (Corso)

299. Directed Reading—Aspects of preventive medicine, public health, social aspects of disease and health, economics of medical care, occupational or environmental medicine, epidemiology, international health, or related fields. Prerequisite: consent of the instructor.

1-18 units, any quarter (Staff)

391. Political Economy of Health Care in the United States—(Same as Business E331, Economics 348.) The financial and public policy context in which the health care system operates, and the issues in public policy controlling it in the public expenditure. Issues: financing and organization for the delivery of health care in the U.S., how various existing and proposed financing and organizational arrangements affect the allocation of resources, fee-for-service practice and health maintenance organizations, hospital investment decisions and regional planning, health care costs, and national health insurance. Prerequisite: graduate student.

4 units, Spr (Kessler)

392. Cost-Benefit Analysis in Health Care—(Same as Business E332, Biomedical Informatics 432.) For graduate students. How do you do cost-benefit analysis when the output is difficult or impossible to measure? How do M.B.A. analytic tools apply in health services? Study/discussion of the main literature on the principles of cost-benefit analysis applied to health care. Critical review of actual studies. Emphasis is on the art of practical application.

4 units, Aut (Garber, Sanders, Owens)

399. Research—Qualified students undertake investigations sponsored by individual faculty members. Prerequisite: consent of the instructor.

1-18 units, any quarter (Staff)